

IN THE CLAIMS:

Please cancel claims 3, 7-13 and 15 in their entirety without prejudice nor disclaimer of the subject matter set forth therein.

Please amend claim 1 as follows.

1. (Currently Amended) A method for fabricating a semiconductor device having a MIS transistor comprising the steps of:

preparing an epitaxial semiconductor substrate with a multi-layer structure having an epitaxial region formed by epitaxial growing silicon on a silicon substrate;

forming a gate electrode above said epitaxial region with a gate insulating film sandwiched therebetween; and

forming a diffusion layer of said MIS transistor in said epitaxial region, by using ~~a dopant ion having a relatively large mass number~~ an indium ion,

wherein a dose of said indium ion is  $5 \times 10^{13}/\text{cm}^2$  or more, and said diffusion layer is formed shallower than said epitaxial region.

2. (Original) The method for fabricating a semiconductor device of Claim 1, wherein said epitaxial region has a <110>-oriented zone axis.

3. (Canceled)

4. (Original) The method for fabricating a semiconductor device of Claim 1, wherein said diffusion layer corresponds to a pocket diffusion layer of a MIS transistor, and

the method for fabricating said MIS transistor includes the steps of:

forming said pocket diffusion layer by implanting a first dopant of a first conductivity type corresponding to said dopant ion into said epitaxial region with said gate electrode used as a mask; and

forming an extension diffusion layer by implanting a second dopant of a second conductivity type into said epitaxial region to have shallower junction than said pocket diffusion layer with said gate electrode used as a mask.

5. (Original) The method for fabricating a semiconductor device of Claim 4, further comprising a step of forming a channel diffusion layer by implanting a third dopant of the first conductivity type into said epitaxial region before forming said gate electrode.

6. (Original) The method for fabricating a semiconductor device of Claim 4, wherein said second dopant is an antimony ion.

7-13 (Canceled)

14. (Original) The method for fabricating a semiconductor device of Claim 1, wherein said diffusion layer is a pocket diffusion layer formed on both sides of said gate electrode in said epitaxial region.

15. (Canceled)

16. (Withdrawn) A method for fabricating a semiconductor device having a MIS transistor comprising the steps of:

preparing a semiconductor substrate composed of silicon and having a main surface of < 100 >-orientation;

forming a gate electrode above said semiconductor substrate with a gate insulating film sandwiched therebetween; and

forming a diffusion layer of said MIS transistor by using a dopant ion having a relatively large mass number in said semiconductor substrate.

17. (Withdrawn) The method for fabricating a semiconductor device of Claim 16,

wherein said dopant ion is an indium ion.

18. (Withdrawn) The method for fabricating a semiconductor device of Claim 16,

wherein said diffusion layer corresponds to a pocket diffusion layer of a MIS transistor, and

the method for fabricating said MIS transistor includes the steps of:

forming said pocket diffusion layer by implanting a first dopant of a first conductivity type corresponding to said dopant ion into said semiconductor substrate with said gate electrode used as a mask; and

forming an extension diffusion layer by implanting a second dopant of a second conductivity type into said semiconductor substrate to have shallower junction than said pocket diffusion layer with said gate electrode used as a mask.

19. (Withdrawn) The method for fabricating a semiconductor device of Claim 18, further comprising a step of forming a channel diffusion layer by implanting a third dopant of the first conductivity type into said semiconductor substrate before forming said gate electrode.

20. (Withdrawn) The method for fabricating a semiconductor device of Claim 18,

wherein said second dopant is an antimony ion.

21. (Withdrawn) The method for fabricating a semiconductor device of Claim 17,

wherein a dose of said indium ion is  $5 \times 10^{13}/\text{cm}^2$  or more.

22. (Withdrawn) The method for fabricating a semiconductor device of Claim 17,

wherein said diffusion layer corresponds to a pocket diffusion layer of said MIS transistor, and

the method for fabricating said MIS transistor includes the steps of:

forming said pocket diffusion layer by implanting a first dopant of a first conductivity type corresponding to said dopant ion into said semiconductor substrate with said gate electrode used as a mask; and

forming an extension diffusion layer by implanting a second dopant of a second conductivity type into said semiconductor substrate to have shallower junction than said pocket diffusion layer with said gate electrode used as a mask.

23. (Withdrawn) The method for fabricating a semiconductor device of Claim 22,

wherein said second dopant is an antimony ion.

24. (Withdrawn) The method for fabricating a semiconductor device of Claim 16,

wherein said dopant is an antimony ion.

25. (Withdrawn) The method for fabricating a semiconductor device of Claim 17,

wherein said diffusion layer is a channel diffusion layer formed below said gate electrode in said semiconductor substrate.

26. (Withdrawn) The method for fabricating a semiconductor device of Claim 17,

wherein said diffusion layer is a pocket diffusion layer formed on both sides of said gate electrode in said semiconductor substrate.

27. (Withdrawn) The method for fabricating a semiconductor device of Claim 16,

wherein said silicon substrate has a CZ crystal substrate formed by using a CZ method.

28. (Withdrawn) A method for fabricating a semiconductor device having a MIS transistor comprising:

a step of forming a diffusion layer of said MIS transistor by implanting a dopant ion having a relatively large mass number into said semiconductor substrate at a current density of approximately  $100 \mu\text{A}/\text{cm}^2$  or less.

29. (Withdrawn) The method for fabricating a semiconductor device of Claim 28,

wherein said dopant ion is an indium ion.

30. (Withdrawn) A method for fabricating a semiconductor device having a MIS transistor comprising:

a step of forming a diffusion layer of said MIS transistor by implanting a dopant ion having a relatively large mass number into said semiconductor substrate at an angle of approximately 30 degree or more against a vertical direction to a substrate surface of said semiconductor substrate.

31. (Withdrawn) The method for fabricating a semiconductor device of Claim 30,

wherein said dopant ion is an indium ion.